TRANSVAAL CRUSTACEA.

Part I.

On a Collection made by Mr. J. Hewitt and the Rev. Noel Roberts.

By Paul A. Methuen.

This collection, which Mr. Hewitt has been kind enough to hand over to me to work out, was made during the years 1909 and 1910. Most of the specimens were taken in the immediate neighbourhood of Pretoria; some, however, came from further afield, Kimberley and Wakkerstroom being among the recorded localities. A few tubes contain specimens taken in the Eastern Province.

After a cursory examination of the collection the following genera were recognized or suspected as being represented :—

Branchiopoda : *Streptocephalus*, *Estheria*.

Cladocera : *Daphnia*, *Ceriodaphnia*, *Simosa*, *Moina*, *Bosmina*, *Chydorus*, *Leydigia*, *Macrothrix*.

Copepoda Gymnoplea : *Broteas*, *Diaptomus*.

Copepoda Podoplea : *Cyclops*, and some Harpactids.

Ostracoda : *Cypris*.

In the vicinity of Pretoria, which lies 4471 feet above the sea-level, the habitat of these little creatures is rain puddles, small pools, and vleis, all liable to desiccation during the winter months, and dams in which, as a rule, one will find water all the year round. The most abundant of the entomostracan fauna appears to be species of *Cyclops*, Harpactids, and a species of *Moina*. In places *Bosmina longirostris* G. O. Müller, and *Leydigia quadrangularis* Leydig, were taken in numbers. The occurrence of *Bosmina* here is not without interest. The genus is recorded from German East Africa by Weltner (7), but there appears to be no record from South Africa previous to the present. Its distribution is probably a matter of some importance, and has been largely used by Smith (6) to illustrate the Antarctica theory which was first advanced by Hooker to account for a certain similarity existing between the Cape and South American and Australian floras. However, it is hoped in a later part to introduce a discussion of this theory, which will be illustrated by a South African fresh-water Gammarid which has lately come to light.

Cladocera.

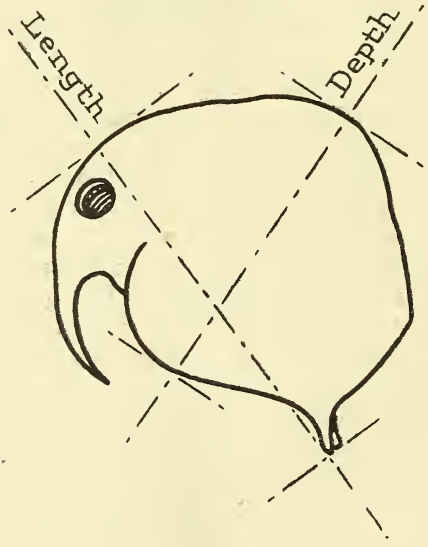
Moina belli Gurney (Pl., Fig 1), taken in the Orange Free State at Kroonstad, by Major E. Eckersley, R.A.M.C., and described by Gurney (2) in 1904 : a description and figures of the female only were given. In the specimens from Pretoria the setose spines on the telson vary from six to eight in number, in addition to the forked spine and minute serrated seta springing from its base, both of which are always present ; also the anterior margins of the two terminal claws (fig. %), as well as the posterior margins, are partly setose. Gurney has figured two minute spines in

their place, springing from the base of these claws. A concavity above the eye in both female and male is evident. In addition to the ventral margin of the carapace being setose for about two-thirds of its length the hinder margin is also setose, but the setae on this part are minute.

In the male (fig. 3) the antennules are not ciliated; they have indications of segmentation and bear anteriorly at about a quarter of their length a single fine hair, and distally three curved bristles and a bunch of delicate processes, papilla tipped. The male is somewhat smaller than the female and naturally not so deep in proportion.

Localities :—Transvaal: Wakkerstroom; pond near Rifle Range, Pretoria; Villieria, Pretoria; Muckleneuk, Pretoria; Roberts Heights, Pretoria.

Bosmina longirostris O. F. Müller, var. nov. (?) *africana australis* (Pl., Fig. 2; Pl., Fig. 3). Female: length as in text figure from head to tip of posterior horns of carapace 0·40 mm., depth, 0·32; male: length 0·33, depth, 0·19. The length measurements would vary slightly, since the size of the posterior horns (fig. 3) of the carapace are not constant in size. These structures may be rather short and smooth or somewhat longer and notched along the central margin; they always possess a slight upward curve.



The female is sub-globular in form. The carapace at its dorso-posterior extremity forms an obtuse angle; about six fairly long hairs are seen on the ventral margin towards the head region. The anterior part of the head is evenly rounded; the eye is rather small. The antennules are fairly long. The telson bears in front of the long plumose setae a small spine, and towards its extremity two other small spines. The terminal claws are provided with two continuous series of setae, the proximal series stouter and longer than the distal.

Locality :—Transvaal: Rifle Range Pond, Pretoria.

Chydorus carolinae Methuen.—Described from Lake Chrissie in 1910 (4). Mr. Hewitt's specimens agree in every particular with this species.

Locality :—Transvaal : Wonderboom, Pretoria.

Leydigia quadrangularis Leydig (Pl., Fig. 4).—Up to the present one good and two doubtful species of *Leydigia* have been described from South Africa. In 1904, Gurney (*loc. cit.*) described one he called *L. africana*, from Kroonstad. In 1907, Brady (1) described *L. propinqua* Sars, from Natal, and in 1910 I described one from Lake Chrissie in the eastern Transvaal (*loc. cit.*), calling it *L. trispinosa*. It is now evident that neither *africana* nor *trispinosa* have any claims to be separated from previously known species. Mr. Gurney, writing to me a little time ago, suggested that *trispinosa* was synonymous with the widely distributed *propinqua*. However, after a second examination of my species and of others caught in the Transvaal by Mr. Hewitt, and after re-reading Mr. Gurney's description of *L. africana*, I have been led to the conclusion that, according to Lilljeborg's (3) key, the Transvaal and Orange Free State species of the high veldt should be regarded as being *L. quadrangularis*. I am very grateful to Mr. Gurney for his opinion on the subject, but I cannot bring myself to think that the high veldt species is *L. propinqua*, owing to points of difference in the shape of the carapace, the nature of the striations or markings on the same, the length of the hairs on the inferior margin of the labrum, the nature of the terminal claws of the telson.

The chief differences between the two species *L. propinqua* and *L. quadrangularis* appear to be these :—

L. quadrangularis : both terminal claws of telson provided with a basal spine ; carapace without striations ; hairs on inferior margin of labrum minute.

L. propinqua : the two terminal claws of telson without basal spine ; carapace striated ; hairs on inferior margin of labrum comparatively long.

The arrangement of the spines and setae on the margin of the telson is distinct in both species.

Specimens Mr. Hewitt took near Pretoria, *L. trispinosa* from Lake Chrissie, and, I suggest, *L. africana* from Kroonstad, possess those characters which have been given above for *L. quadrangularis*. *Leydigia* was first recorded from South Africa by Sars (5), who described *L. propinqua* (*acanthocercoides* Fischer) from Knysna (low country), in the Cape Colony. In his remarks about the species he says : " From the Australian species, described by the author as *L. australis*, it is at once distinguished by the very distinct sculpturing of the shell, and, moreover, by the smaller size of the ocellus, as well as by the form of the tail. In the latter respect it more resembles the *L. quadrangularis* Leydig, a species also found in Norway, but in that form the terminal claws have each a distinct denticle at the base which is wanting in the present species, while the sculpture of the shell is also different." (Page 19.)

Fig. 5 has been introduced to show the nature of the spines on the posterior part of the carapace, which appears to have minute thickenings,

each localized in a way such as to give the appearance of regular arrangement; these thickenings, however, do not extend over the whole of the carapace.

REFERENCE LITERATURE.

(1) Brady, G. Stewardson. "On Entomostraca collected in Natal by Mr. James Gibson (Part II)." Ann. Natal Gov. Museum, Vol. 1, pt. 2, pp. 173–186, pls. xxix–xxxii, March, 1907.

(2) Gurney, R. "On a small collection of Entomostraca from South Africa." Proc. Zool. Soc., 1904, Vol. II, pp. 298–301, pl. xviii.

(3) Lilljeborg, W. "Cladocera Sueciae." Upsala, 1900.

(4) Methuen, Paul A. "On a collection of Fresh-water Crustacea from the Transvaal." Proc. Zool. Soc., 1910.

(5) Sars, G. O. "South African Entomostraca raised from dried mud sent from Knysna." Vid-Selsk. Skrifter, M.-N., Kl., 1895, No. 8, pp. 1–56, pls. i–viii.

(6) Smith, W. G. "Fresh-water Crustacea of Tasmania." Trans. Linn. Soc., Ser. 2, Zool. 11, pt. 4, 1909.

(7) Weltner, W. "Die Cladoceren Ost-Afrikas, Deutsch Ost-Afrika." 4, 1898, Berlin.

EXPLANATION OF PLATES.

The figures have been drawn with the aid of a camera lucida.

FIRST PLATE.

Fig. 1.—Lateral view of a male *Moina belli* Gurney.

„ 2.—Lateral view of a female *Bosmina longirostris* var. nov. (?) *africana australis*.

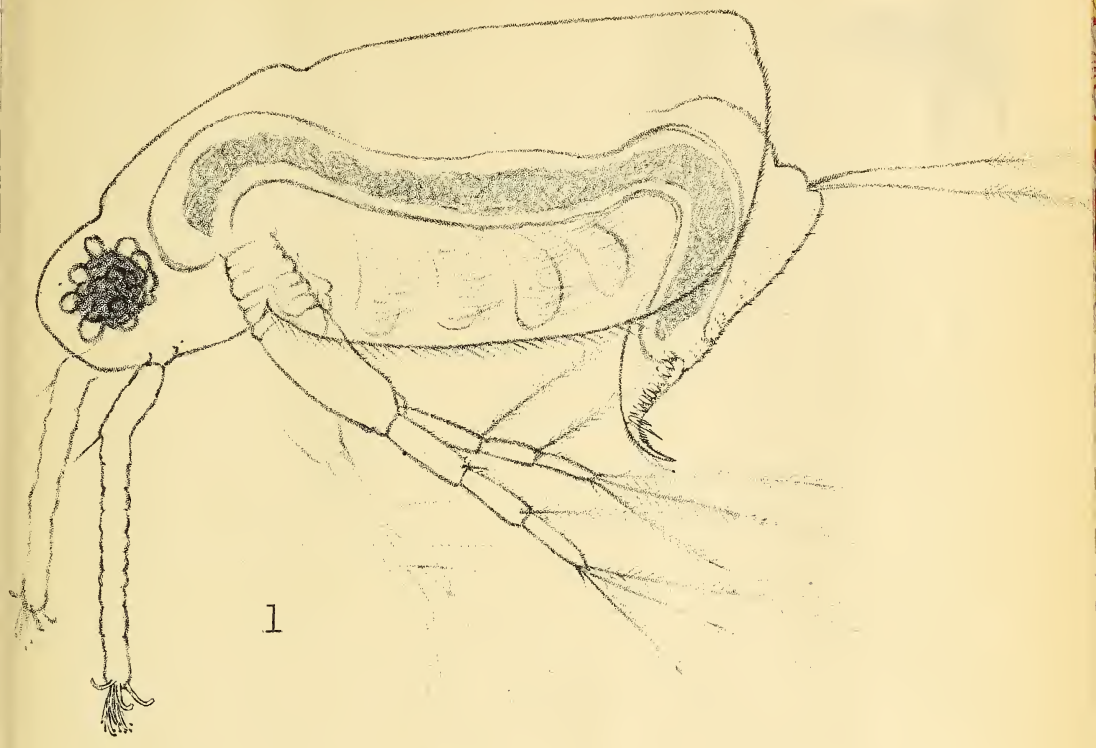
„ 3.—Lateral view of a young (?) male *Bosmina longirostris* var. nov. (?) *africana australis*.

SECOND PLATE.

„ 4.—Part of the posterior margin of the carapace of a female *Leydigia quadrangularis* Sars.

„ 5.—Telson of a female *Bosmina longirostris* var. nov. (?) *africana australis*.

„ 6.—Posterior horns of carapace of *Bosmina longirostris* var. nov. (?) *africana australis*, indicating the extent of variation of this structure in the species.



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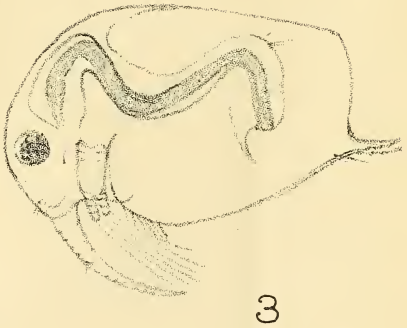

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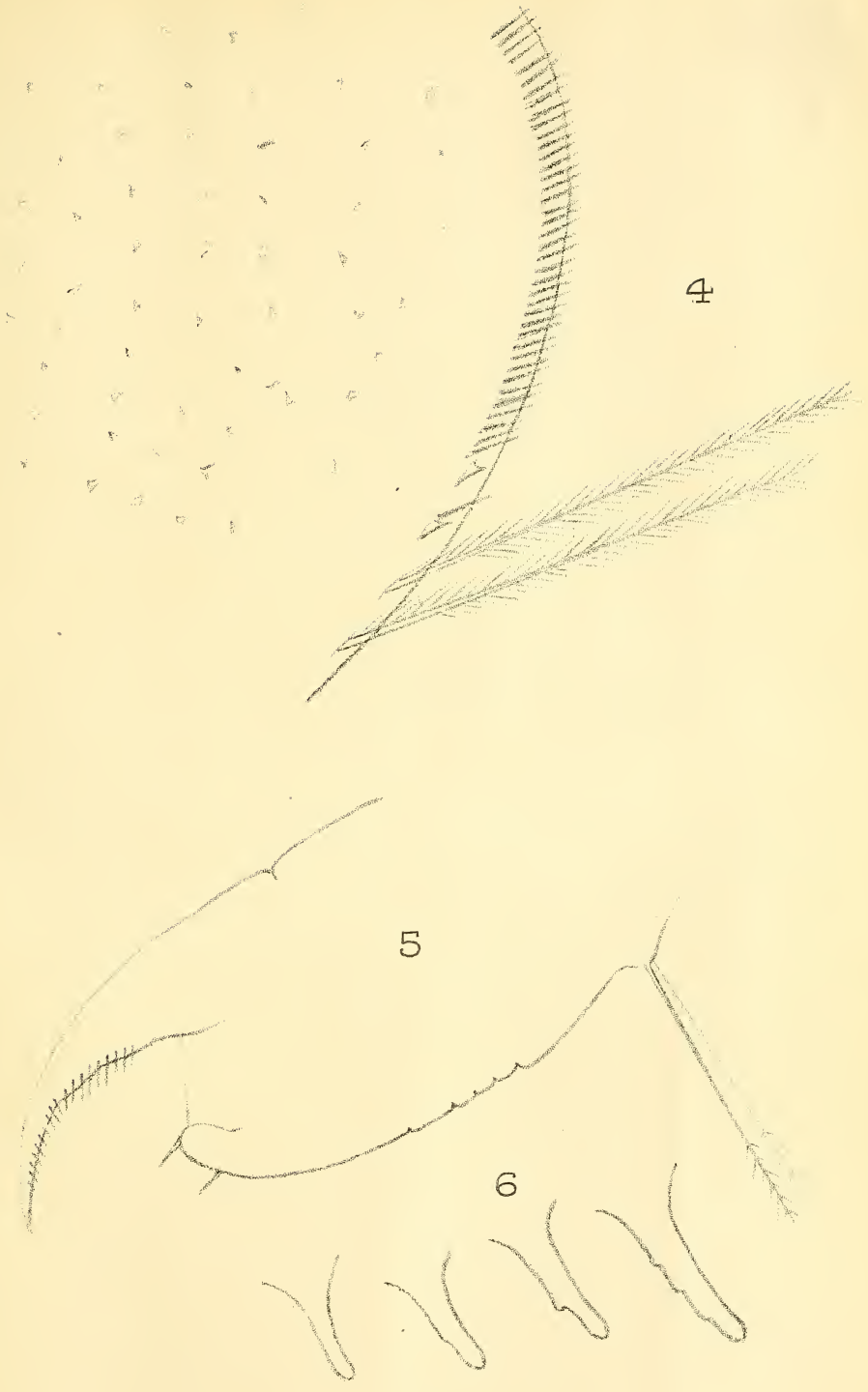
1. MOINA BELLI (*Gurney*).

2. 3. BOSMINA LONGIROSTRIS (*O. F. Muller*).



4. LEYDIGIA QUADRANGULARIS (*Leydig*). 5. 6. BOSMINA LONGIROSTRIS.